

REMARKS/ARGUMENTS

Claims 1-3, 5-8 and 11 to 15 are active. Claims 5-8 and 11-13 are withdrawn.

The claimed invention provides an aqueous paper size composition according to Claim 1 and claims dependent thereon, which produces paper sizing performance improvement as indicated by lower Cobb values and longer ink flotation time when compared to conventional paper sizes.

The rejection of Claims 1-3, 9, 14 and 15 under 35 U.S.C. 103 (a) over Rinck et al. (U.S. 5,147,907) in view of Giesecke et al. (U.S. 6,489,382) is respectfully traversed.

Rinck describes a process for the production of an aqueous polymer dispersion by free radical polymerization of a diene monomer, optionally with a vinyl aromatic monomer and an ethylenically unsaturated monomer. The monomer composition contains:

20-100% by weight of the diene monomer,

0-80% of the vinyl-aromatic monomer, and

0-50% of the ethylenically unsaturated monomer.

The monomer mixture is polymerized in the presence of a dextrin dispersion wherein the dextrans have a molecular weight range described wherein at least 50% by weight of the dextrans have a molecular weight greater than 5000 and no more than 5% by weight have a molecular weight greater than 100,000 (Abstract). The average particle size of the resulting polymer dispersion is less than 250 nm Col. 4, lines 48-49).

In contrast, the present invention as described in Claim 1 contains polymer particles, the mean particle size of which is in the range of 50-100 nm. The composition of the polymer particles prepared contains at least 50% by weight of a vinyl-aromatic monomer and at least 1% by weight of 1,3-butadiene and/or isoprene. The degraded starch of the claimed invention has a molecular weight of from 500 to 40,000. The dispersion contains a catalyst having cerium, manganese and/or iron(II).

The Office recognizes that the primary reference does not disclose or suggest based on cerium, manganese and/or iron(II) and cites Giesecke to show such catalysts (Official Action dated June 15, 2009, page 2, paragraphs 3 and 4).

Giesecke describes a water-dispersible graft copolymer based on at least one hydrophobic, ethylenically unsaturated monomer, optionally one or more ethylenically unsaturated hydrophilic monomers, and at least one natural protective colloid or protective colloid obtained from a natural protective colloid by derivatization or thermal, enzymatic, oxidative, hydrolytic or bacteriological degradation having an average molar mass of $M_n > 500$ g/mol. (Claim 1). Giesecke is silent with regard to particle size, does not disclose or suggest any improvement in paper sizing performance would be obtained with a polymer particle dispersion as described in the present invention.

Moreover, in addition to the deficiency of Rinck recognized by the Office, Applicants respectfully submit that the primary reference fails to sufficiently recognize or describe the molecular weight range of the dextrin component. Rinck states (Col. 3, lines 15-18):

The average molecular weight of the decomposed dextrans has no decisive influence on the stability and viscosity of the dispersions produced by the process according to the invention.

Applicants respectfully submit that Rinck describes a broad range of dextrin molecular weight and fails to recognize a relationship of molecular weight on stability of the dispersion prepared. In contrast, Applicants have described (page 5, lines 40-44):

The starches degraded in this manner have an average molecular weight M_n of from 500 to 40 000, preferably from 500 to 10 000, with the result that, on the one hand, good dispersing of the emulsion polymers is ensured and, on the other hand, precipitation of the polymerization batch is avoided.

In addition, Rinck does not disclose or suggest that the content of the vinyl aromatic monomer component must be 50 % by weight or more. Rinck actually does not require the

presence of any vinyl aromatic monomer. Even in the preferred mixed monomer composition (Col. 4, lines 29-32) the primary reference does not disclose, suggest or provide motivation that would have led one of ordinary skill in the art at the time of the present invention to prepare a monomer mixture containing at least 50% by weight of a vinyl-aromatic monomer.

Furthermore, Rinck describes a particle having an average diameter less than 250 nm. Applicants respectfully submit that such description of average molecular weight is extremely broad and includes a wide range of possible particle diameter distributions.

As described in the above paragraphs, Rinck describes a composition covering a broad and nearly infinite number of possible compositions and dispersion physical parameters.

The MPEP § 2144.05 I. states:

However, if the reference's disclosed range is so broad as to encompass a very large number of possible distinct compositions, this might present a situation analogous to the obviousness of a species when the prior art broadly discloses a genus.

The MPEP further references *In re Baird*, 16 F.3d 380, 29 USPQ2d 1550 (Fed. Cir. 1994) which states:

Given the vast number of diphenols encompassed by the generic diphenol formula in Knapp, and the fact that the diphenols that Knapp specifically discloses to be "typical," "preferred," and "optimum" are different from and more complex than bisphenol A, we conclude that Knapp does not teach or fairly suggest the selection of bisphenol A. See *In re Belle* 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993) (DNA sequence would not have been obvious in view of prior art reference suggesting a nearly infinite number of possibilities and failing to suggest why among all those possibilities one would seek the claimed sequence). A disclosure of millions of compounds does not render obvious a claim to three compounds, particularly when that disclosure indicates a preference leading away from the claimed compounds.

Applicants further note that in reversing an obviousness rejection in *Ex parte* SUSUMU TANAKA and YASUO MURAKAMI (Appeal 2007-3845; Decided: March 28, 2008) the Board of Patent Appeals and Interferences stated:

In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). “[R]jections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)

Applicants respectfully submit that in view of all the above, the Office has not shown how the cited reference combination discloses or suggests all the description of the claimed invention. A broad range of composition and physical parameters are provided by Rinck in view of Giesecke.

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleaned from the invention itself. *Interconnect Planning Corp.* 774 F.2d, 1143, 227 USPQ 551.

Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co.* 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)

Applicants respectfully submit that only in hindsight, in view of the claimed invention, would one of ordinary skill in the art combine the cited references to obtain the invention as claimed. The Office has not provided any reasonable explanation of how or why one of ordinary skill in the art would have combined the cited references to obtain the claimed invention, at the time of the present invention. Accordingly, Applicants respectfully submit that a *prima facie* conclusion of obviousness has not been established and withdrawal

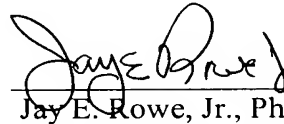
Application No. 10/510,279
Reply to Office Action of June 15, 2009

of the rejection of Claims 1-3, 9, 14 and 15 under 35 U.S.C. 103 (a) over Rinck in view of Giesecke is requested.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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